



SCIENTIST IN RESIDENCE PROGRAM™

Science Unit: Exploring Biodiversity Like a Scientist

Lesson # 5: Life at the Beach

Lesson Summary:

In this lesson, students will head to Crescent Beach to discover the life in the intertidal! At the beach, students will observe the diversity of life at the beach and conduct a mini survey to count the number of each species in a small quadrat.

Grade level:	Presented to grade K-2; appropriate for grades K – 4 with age appropriate modifications
Duration of lesson:	Field trip: bus to and from Crescent Beach, activities at the beach for 1.5 hours (or available time), eat lunch and bus home.
School Year:	2015/2016
Developed for:	Collingwood Neighborhood School, Vancouver School District
Developed by:	Carla Crossman (scientist); Mily Phan and Nadine Kinna (teachers)
Notes:	The field trip is scheduled for a low tide. The length of activities at the beach will depend on the time available based on bus times and lunch.

Learning Objectives

1. Discovering the diversity of life found at the beach.
2. Conduct a small survey of the animals using a “quadrat”.
3. Think about how many different *types* of plants and animals live in the intertidal

Materials

- Small hula hoops to use as transect plots
- Small Hand shovels
- Small Clipboards
- Magnifying glasses
- Pencils
- Worksheets printed on waterproof paper
- Additional paper to draw species

Safety Notes

Safety of the students:

Crescent Beach was chosen as it is a very low grade rocky beach instead of larger boulders to climb over. This is more suitable for very young children with little outdoor exploration experience. Despite the shallow grade, any intertidal area may be very slippery and caution should be taken at all time when walking on the rocks – especially wet rocks or those covered in seaweeds.

Safety of the animals:

Reviewing how to properly touch animals at the beach (one finger touch – pinkie finger is best).
Reviewing the hinge of death principle - when looking under rocks and reminding students to always return animals to where they found them.



SCIENTIST IN RESIDENCE PROGRAM™

Background Information

The goal of this lesson is to have students engage in exploration and discovery. Encourage students to touch things and get their hands dirty. Lead by example if possible. Students will be very excited and we will try to strike a balance between free time to explore a larger area and sitting and focusing on one particular area of the beach. Encourage the students to ask questions as they start to observe the natural world. Also, encourage students to look at not just the life on the beach, but how the life in the ocean, the air and the land all meet and are connected in the intertidal zone.

Vocabulary

Word	Brief definition
Tides	The rising and falling of the ocean, usually twice each day due to the attraction of the moon and the sun.
Intertidal	The area of shoreline exposed at low tide, but covered with water at high tide that is home to a lot of marine invertebrates.

Lesson Detail

Introduction

Welcome to the beach! At Crescent Beach we are going to walk down the path (closer to the rocky area on the beach). Be sure to review safety considerations as soon as the students arrive.

Activity 1: Watch the Tide (Optional)

Bury a stick vertically at the water's edge to mark the water's edge when you arrive. Check it at the end of your visit.

Activity 1: Exploration

Purpose of Activity: To get students excited about the animals of the intertidal and taking a closer look at their surroundings.

Methods and Instructions:

1. Review the safe handling and touching of animals.
2. Let the students explore the beach in small groups with magnifying glasses.
3. Encourage students to ask questions.
4. If time permits, ask students to draw their favorite species.

Activity 2: Count like a scientist

Purpose of Activity: Conduct a small survey of all the species on the beach.

Methods and Instructions:

1. Explain that biologists use a tool called a **quadrat** to study a large area. It would be impossible to count every animal on the beach, so scientists study a few small areas very carefully.
2. Give each group of students a hula hoop to use as a small sampling quadrat.
3. Ask them to place the hula hoop on the ground and count all of the animals inside their hoop.
4. If appropriate, have students complete the data sheet with the number of each species they find.



SCIENTIST IN RESIDENCE PROGRAM™

Closure Discussion Questions

1. What did you see today? What surprised you?
2. Sum up the total number of each species we found in all of our quadrats – estimate how many times we could put our hula hoops down as a group and show an estimate of the number of each species at the entire beach!
3. Which place do you think has more *types* of plants and animals: 1) here in the intertidal zone or 2) in the grass field at our school?

Extension (Back at School)

1. Have students reflect on their field trip to the beach:
 - What did you see at the beach?
 - Where did the animals live?
 - What are some ways intertidal animals can “hold on” when the tide is high and the waves are crashing on them?
 - What are some ways that intertidal animals can stay cool and wet on a hot summer day when the tide is low?
2. How can intertidal animals protect themselves from predators that live on the land? In the water? In the air?

References

EZ-ID Guides. A guide of intertidal creatures of the Salish Sea put together by the Sound Water Stewards. <http://soundwaterstewards.org/ezydweb/>

Intertidal Zone. A summary of the unique features of an intertidal zone and some of the species you might expect to see in local BC shorelines. <https://www.crd.bc.ca/education/our-environment/ecosystems/coastal-marine/intertidal-zone>

Name: _____

Species	How many do you see in your quadrat?
Crabs	
Limpets	
Blue mussels	
Barnacles	
Sea stars	
Periwinkles or whelks	
Seaweeds	
What else did you see?	